REMARKS

This application has been reviewed in light of the Office Action dated October 5, 2004. Claims 1-8 and 10-14 are presented for examination, of which Claims 1, 5, 7, 10, 13, and 14 are in independent form. Claim 9 has been canceled, without prejudice or disclaimer of subject matter, and will not be discussed further. Claims 1, 5, and 7 have been amended to define still more clearly what Applicants regard as their invention, and Claims 2-4, 6, and 8 have been amended as to matters of form. Claims 10-14 have been added to provide Applicants with a more complete scope of protection. Favorable reconsideration is requested.

Applicants note with appreciation the indication that Claim 4 would be allowable if rewritten so as not to depend from a rejected claim, and with no change in scope. This claim has not been so rewritten because, for the reasons given below, its base claim is believed to be allowable.

Claims 1, 5, and 7 have been provisionally rejected for obviousness-type double patenting, as being unpatentable over Claims 1 and 17 of copending U.S. Application No. 10/351,326 (corresponds to U.S. Patent Publication No. 2003/014413, *Takemoto et al.*). Claims 1, 5, and 7 were rejected under 35 U.S.C. § 102(e) as being anticipated by *Takemoto et al.*; and Claims 1-3 and 5-8 were rejected under 35 U.S.C. § 102(e) as being anticipated by the article, "Superior Augmented Reality Registration by Integrating Landmark Tracking and Magnetic Tracking (*State et al.*).

As shown above, Applicants have amended independent Claims 1, 5, and 7 in terms that more clearly define what they regard as their invention. Applicants submit that these amended independent claims and new independent Claims 10, 13, and 14,

together with the remaining claims dependent thereon, are patentably distinct from the cited prior art for at least the following reasons.

The aspect of the present invention set forth in Claim 1 is an information processing method for calculating a first parameter used to transform a measured value of a sensor into a position and orientation of an image sensing unit, where the sensor comprises a transmitter and a receiver. The method includes acquiring the measured value of the sensor when an image of the transmitter, placed in a real space, is captured at or nearly at the center of a captured image. The image is captured by the image sensing unit to which the receiver is attached. The method also includes calculating the first parameter using the measured value of the sensor. The transmitter of the sensor is also placed at the origin of a sensor coordinate system.

Among other notable features of Claim 1 are acquiring the measured value of the sensor when an image of the transmitter, placed in a real space, is captured at or nearly at the center of a captured image, the image being captured by the image sensing unit to which the receiver is attached, wherein the sensor comprises a transmitter and a receiver, and the transmitter is also placed at the origin of a sensor coordinate system. By virtue of these features, a relationship of the positions of the image sensing unit and the transmitter is defined.

Takemoto et al. relates to a position and orientation determination method and apparatus for identifying a parameter indicating the position and orientation of image sensing means for image sensing in actual space. *Takemoto et al.* discusses determining the position and orientation of the image sensing means based on positions of a plurality of feature points in a video image obtained by image sensing performed by the image sensing

means and a measured value of a sensor. The *Takemoto et al.* method can determine the position and orientation of the image sensing means without the sensor, if enough feature points are observed in the video image. Accordingly, the *Takemoto et al.* method does not need to capture the transmitter in the video image. In contrast, the present invention as recited in Claim 1 requires capturing the transmitter of the sensor at nearly the center of the captured image.

Further, nothing has been found in *Takemoto et al.* that would teach or suggest acquiring the measured value of the sensor when an image of the transmitter, placed in a real space, is captured at or nearly at the center of a captured image, the image being captured by the image sensing unit to which the receiver is attached, as recited in Claim 1.

For at least the above reasons, Applicants submit that Claim 1 is clearly patentable over *Takemoto et al.*

Claim 1 was also rejected as being anticipated by the *State et al.*

State et al., as shown in Figure 1, and described in Section 7, discusses predicting a head pose based on an output of a sensor and positions of land marks detected in digitized stereo images. However, nothing has been found in *State et al.* that would teach or suggest acquiring the measured value of the sensor when an image of the transmitter, placed in a real space, is captured at or nearly at the center of a captured image, the image being captured by the image sensing unit to which the receiver is attached, as recited in Claim 1.

For at least the above reason, Applicants submit that Claim 1 is clearly patentable over *State et al.*

Independent Claims 5 and 7 are program and apparatus claims respectively corresponding to method Claim 1, and are believed to be patentable for at least the same reasons as discussed above in connection with Claim 1.

Applicants have carefully reviewed Claims 1 and 17 of copending U.S. Application No. 10/351,326 (*Takemoto et al.*) with regard to the double patenting rejection set forth in the Office Action. None of these claims include any recitation of acquiring the measured value of the sensor when an image of the transmitter, placed in a real space, is captured at or nearly at the center of a captured image, the image being captured by the image sensing unit to which the receiver is attached, wherein the sensor comprises a transmitter and a receiver, and the transmitter is also placed at the origin of a sensor coordinate system, as recited in Claim 1. In contrast, Claims 1 and 17 of copending U.S. Application No. 10/351,326 merely disclose determining the position and orientation of the image sensing means based on positions of a plurality of feature points in a video image obtained by image sensing performed by the image sensing means and a measured value of a sensor. However, these claims fail to disclose capturing the transmitter of the sensor at or nearly at the center of the captured image.

For these reasons, Claim 1 is believed clearly patentable over Claims 1 and 17 of copending U.S. Application No. 10/351,326. As noted above, independent Claims 5 and 7 are program and apparatus claims respectively corresponding to method Claim 1, and are also believed clearly patentable over Claims 1 and 17 of copending U.S. Application No. 10/351,326 for reasons substantially similar to those discussed above in connection with Claim 1.

Applicants submit the following comments in support of patentability of new Claims 10-14.

The aspect of new independent Claim 10 is an information processing method for calculating a first parameter used to transform a measured value of a sensor into a position and orientation of an image sensing unit, where the sensor comprises a transmitter and a receiver with the receiver of the sensor being attached to the image sensing unit. The method includes acquiring the measured value of the sensor upon adjusting the position and orientation of the image sensing unit to capture an image of the transmitter in a real space, calculating the first parameter using the measured value of the sensor, superimposing a virtual image of the transmitter on the captured image on the basis of the calculated first parameter, and inputting a user's instruction associated with an adjustment value of the calculated first parameter, and updating the virtual image in accordance with the adjustment value.

Among other notable features of Claim 10 are (1) acquiring the measured value of the sensor upon adjusting the position and orientation of the image sensing unit to capture an image of the transmitter in a real space, and (2) superimposing a virtual image of the transmitter on the captured image on the basis of the calculated first parameter. Feature (2) corresponds to an arrangement of superimposing a virtual image of the transmitter on the captured image as depicted in Figures 14B and 14C.[1]

For reasons substantially similar to those discussed above in connection with Claim 1, nothing has been found in either *Takemoto et al.* or *State et al.* that would

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1/It is to be understood, of course, that the claim scope is not limited by the details of the described embodiments, which are referred to only to facilitate explanation.

teach or suggest acquiring the measured value of the sensor upon adjusting the position and orientation of the image sensing unit to capture an image of the transmitter in a real space, as recited in Claim 10.

Accordingly, Applicants submit that independent Claim 10 is patentable over the cited prior art.

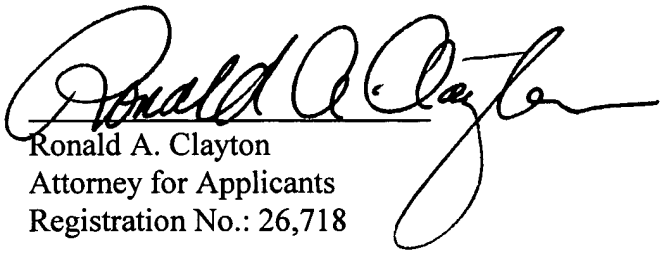
Independent Claims 13 and 14 are program and apparatus claims respectively corresponding to method Claim 10, and are believed to be patentable for at least the same reasons as discussed above in connection with Claim 10.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration or reconsideration, as the case may be, of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,



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